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(54) Title: PROCESS FOR THE PREPARATION OF 1,1,1,3,3-PENTAFLUOROPROPANE AND 1,1,1,3,3-HEXAFLUOROPROPANE

(57) Abstract: A process for the manufacture of  $\text{CF}_3\text{CH}_2\text{CHF}_2$  and  $\text{CF}_3\text{CH}_2\text{CF}_3$  is disclosed. The process involves (a) reacting HF and at least one halopropene of the formula  $\text{CX}_3\text{CCl=CClX}$  (where each X is independently F or Cl) to produce a product including both  $\text{CF}_3\text{CCl=CF}_2$  and  $\text{CF}_3\text{CHClCF}_3$ ; (b) reacting  $\text{CF}_3\text{CCl=CF}_2$  and  $\text{CF}_3\text{CHClCF}_3$  produced in (a) with hydrogen to produce a product including both  $\text{CF}_3\text{CH}_2\text{CHF}_2$  and  $\text{CF}_3\text{CH}_2\text{CF}_3$ ; and (c) recovering  $\text{CF}_3\text{CH}_2\text{CHF}_2$  and  $\text{CF}_3\text{CH}_2\text{CF}_3$  from the product produced in (b). In (a), the  $\text{CF}_3\text{CCl=CF}_2$  and  $\text{CF}_3\text{CHClCF}_3$  are produced in the presence of a fluorination catalyst including a  $\text{ZnCr}_2\text{O}_4$ /crystalline  $\alpha$ -chromium oxide composition, a  $\text{ZnCr}_2\text{O}_4$ /crystalline  $\alpha$ -chromium oxide composition which has been treated with a fluorinating agent, a zinc halide/ $\alpha$ -chromium oxide composition and/or a zinc halide/ $\alpha$ -chromium oxide composition which has been treated with a fluorinating agent.